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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,631	11/17/2005	James Joseph Anthony McCormack	NL 030616	4042

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EXAMINER	
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2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/557,631	MCCORMACK, JAMES JOSEPH ANTHONY	
	Examiner	Art Unit	
	LaTanya Bibbins	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-7 and 10* is/are rejected.

7)☒ Claim(s) *3,8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Preliminary Amendment

1. Receipt is acknowledged of the preliminary amendment filed on November 17, 2005. In the amendment, claims 3, 4, and 7-10 were amended. Currently claims 1-10 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The abstract of the disclosure is objected to because of its undue length. Applicant is reminded of the proper format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words.** It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: the specification is inconsistent with the preferred/suggested guidelines for the layout of the specification. Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al. (US Patent Number 6,796,710 B2) in view of Astrom et al. ("Integrator Windup and How to Avoid it," Proceedings of the 1989 American Control Conference, 1989, p. 1693-1698).

Regarding claim 1, Yates discloses method of controlling radiation power of a radiation source comprising the steps of a) measuring a radiated power of the radiation source (column 8 lines 2-8), b) calculating an error value which is indicative of a difference between the radiated power and a setpoint value (Figure 9 element 142 and column 8 lines 20-36), c) integrating the error value to obtain an integrated error value by feeding the error value to an integrator (Figure 10 element 156 and column 8 lines 20-36), d) multiplying the error value with a factor p to obtain a proportional error value (Figure 10 element 154 and column 8 lines 20-36), and e) driving the radiation source with a current which is derived from the error value by adding the integrated error value and the proportional error value (Figure 9 element 152 and Figure 10 element 164 and the discussion in column 8 lines 20-36 and 46-48).

The combination of Yates fails to disclose, however Astrom discloses f) providing a step signal which indicates that the setpoint value is changed stepwise (see page 1693, Figure 1 and Section 2 and the discussion regarding Ad hoc Methods), and g) temporarily stopping the integration of the error value when the step signal indicates a stepwise change in the setpoint value (see page 1693 Figure 1 and Section 2 and the

discussion regarding Ad hoc Methods and Incremental Algorithms; also note the section titled Incremental Algorithms where windup is avoided by stopping the integration).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the technique of avoiding integrator windup as disclosed by Astrom into the PI controller of Yates. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to avoid integrator windup (see the abstract of Astrom).

Regarding claim 2, the combination of Yates and Astrom disclose the method as claimed in claim 1. Astrom further discloses that the integration of the error value in step g is stopped until the error value becomes smaller than a threshold value (see page 1694, Figure 3 and the section titled Conditional Integration, particularly the discussion regarding updating the integral only when the process output is in the proportional band).

Regarding claim 4, the combination of Yates and Astrom disclose the method as claimed in claim 1. Astrom further discloses that the integration of the error value in step g is stopped by disconnecting the error value from the integrator (see page 1698 and Section 5 titled Conclusions particularly the discussion regarding switching off integration).

7. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. (US Patent Number 5,978,393) in view of Yates et al. (US Patent Number 6,796,710 B2), and further in view of Astrom et al. ("Integrator Windup

and How to Avoid it," Proceedings of the 1989 American Control Conference, 1989, p. 1693-1698).

Regarding claim 5, Feldman discloses a radiation source driving device for controlling a radiation power of a radiation source in an information reproducing and/or recording system for reproducing and/or recording information from/to an information carrier (see column 2 lines 20-22 where Feldman discusses a laser power controller which utilizes PI control).

While Feldman does not specifically disclose the individual components of the PI control Yates discloses radiation power measurement means for measuring a radiation power of the radiation source (column 8 lines 2-8), error value calculation means for determining an error value by calculating a difference between the measured radiation power and a setpoint value (Figure 9 element 142 and column 8 lines 20-36), integration means for determining an integrated error value by integrating the error value (Figure 10 element 156 and column 8 lines 20-36), multiplying means for determining a proportional error value by multiplying the error value with a factor p (Figure 10 element 154 and column 8 lines 20-36), adding means for determining a PI error value by adding the integrated error value and the proportional error value (Figure 10 element 164 and column 8 lines 20-36), radiation source current generator for feeding a current to the radiation source wherein the current is dependent on the PI error value (Figure 9 element 152 and the discussion in column 8 lines 46-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the specific elements of the PI controller as

disclosed by Yates into the PI control of Feldman. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to accurately control the radiation power of the radiation source by driving the error signal to zero (as suggested by Yates in column 8 lines 62 and 63).

The combination of Feldman and Yates fail to disclose, however Astrom discloses blocking means for temporarily stopping the integration means from integrating the error value in response to a step signal indicating a stepwise change in the setpoint value (see page 1693 Figure 1 and Section 2 and the discussion regarding Ad hoc Methods and Incremental Algorithms; also note the section titled Incremental Algorithms where windup is avoided by stopping the integration).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the technique of avoiding integrator windup as disclosed by Astrom into the PI controller of Feldman and Yates. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to avoid integrator windup (see the abstract of Astrom).

Regarding claim 6, the combination of Feldman, Yates, and Astrom disclose a radiation source driving device as claimed in claim 5. Astrom further discloses that the blocking means comprise switching means for connecting and disconnecting the error value to the integration means and wherein the blocking means stop the integration means from integrating the error value by disconnecting the error value from the integration means by controlling the switching means (see page 1698 and Section 5 titled Conclusions particularly the discussion regarding switching off integration).

Regarding claim 7, the combination of Feldman, Yates, and Astrom disclose a radiation source driving device as claimed in claim 5. Astrom further discloses that the blocking means are arranged to stop the integration means from integrating the error value until the error value is smaller than a threshold value (see page 1694, Figure 3 and the section titled Conditional Integration, particularly the discussion regarding updating the integral only when the process output is in the proportional band).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. (US Patent Number 5,978,393) in view of Yates et al. (US Patent Number 6,796,710 B2), and Astrom et al. ("Integrator Windup and How to Avoid it," Proceedings of the 1989 American Control Conference, 1989, p. 1693-1698), and further in view of Yamashita et al. (US Patent Number 5,892,742).

Regarding claim 10, the combination of Feldman, Yates, and Astrom disclose a information reproducing and/or recording device for reproducing and/or recording information from/to an information carrier comprising a radiation source driving device as claimed in claim 5 (see the 35 U.S.C. 103(a) rejection of claim 5 above), a radiation source for generating a radiation beam, which radiation source is driven by the radiation source driving device (see Yates Figure 9 element 152 and the discussion in column 8 lines 46-48).

Feldman, Yates, and Astrom fail to specifically disclose, but Yamashita discloses means for mapping the radiation beam at a spot on the information carrier (see Figure 2 and the objective lens, 80, and prism, 81), and means for causing a relative

displacement between the spot and the information carrier (see the focusing actuator in Figure 1B element 56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made incorporate the objective lens, prism, and focusing actuator of Yamashita into the information reproducing and/or recording device of Feldman, Yates, and Astrom. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to accurately focus light onto the medium surface thus enabling data recording and/or reproduction onto or from the recording medium (as suggested by Yamashita in column 3 lines 37-42).

Allowable Subject Matter

9. **Claims 3, 8, and 9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 3, none of the references of record, alone or in combination suggest or fairly teach a method of controlling radiation power of a radiation source, including all of the limitations of claim 1, further comprising a step of **resetting the integrator after the step signal indicates a stepwise change in the setpoint value.**

Regarding claim 8, none of the references of record, alone or in combination suggest or fairly teach a radiation source driving device including all of the limitations of claim 5 wherein **a first value of the step signal indicates that information is**

reproduced from the information carrier and a second value of the step signal indicates that information is recorded to the information carrier in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

Regarding claim 9, none of the references of record, alone or in combination suggest or fairly teach a radiation source driving device including all of the limitations of claim 5 wherein **the integration means are reset in response to the step signal** in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

Citation of Relevant Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoshikawa et al. (US Patent Number 4,577,320) disclose a light power controlling apparatus contains a semiconductor laser and a photosensor for receiving part of light emitted from the semiconductor laser to produce a corresponding electrical signal. The semiconductor laser is connected to first and second current circuits. The first current circuit averages a voltage signal based on the electrical signal of the photosensor by a first low-pass filter, thereby to have a detected voltage. The detected voltage is compared with a desired voltage by an error amplifier. The error amplifier produces a signal representing a difference between the detected voltage and the desired voltage. The difference signal is integrated by an integrator. According to the integrated signal, the first current circuit supplies a forward current to the semiconductor laser. The second current circuit is set at a peak power value in a modulating mode

according to a voltage signal of a peak power setting member. The second current circuit supplies to the semiconductor laser a forward current according to a modulating signal, with superposing on the forward current of the first current circuit. The modulating signal is averaged by a second low pass filter. A voltage representing the product of the averaged value and the peak power value is added to the desired value. The sum voltage is then supplied to the error amplifier where it is compared with the detected voltage.

Kakuta et al. (US Patent Number 5,059,780) disclose a light power control circuit by which a stable writing without any influence of a high-frequency current on writing data is enabled by performing superposition of the high-frequency signal on a drive current of a laser diode only during a reading mode, and by inhibiting the superposition of the high-frequency current during a writing mode. In a further embodiment having a construction in which a writing drive current is superposed on a reading drive signal in the form of pulses and a voltage proportional to a writing power is subtracted from an error signal in a servo system, an influences of a writing data component on the operation of the servo system is eliminated by effecting a level shift to the voltage by a predetermined level and subtracting the voltage after the level shift from the error signal.

Kakuta (US Patent Number 4,894,525) discloses an optical power control device for a semiconductor light emitting element, a voltage corresponding to a write power set value is modified with write data and then is averaged. The resultant averaged voltage is subtracted from the averaged voltage of the optical power detection

voltage, so that the drive current of the semiconductor light emitting element is controlled in accordance with the difference of the resultant subtraction voltage from the read power set value. As a result, even when the write power has been outputted for a long period of time, it can be switched over to the read power instantaneously. By employing simple switching circuitry, the control device is free from the occurrence of drifts or the adjustment of offsets.

Poletto (US PGPub Number 2002/0167431 A1) discloses a digital control circuit of the P.I. (Proportional Integral) type, receiving an error signal at an input terminal and adapted to provide, at an output terminal, a PWM (Pulse Width Modulated) output signal. The circuit is of a type which comprises at least one analog-to-digital converter connected to the input terminal and to the output terminal through at least one integrative/proportional branch. Advantageously in this invention, the analog-to-digital converter is an integration converter adapted to integrate the error signal before an analog-to-digital conversion thereof.

Muthu (US PGPub Number 2006/0062108 A1) discloses a method directed to sensing individual intensity of a plurality of light sources. The method provides for transmitting a command signal to each of the light sources, sequentially activating the light sources based on the command signals, and determining an intensity value for each light source. The method may further include determining a control signal based on the intensity value of each light source and controlling the light sources with the control signal. In one embodiment, the controller is implemented as a proportional integral controller. The controller adjusts the control voltage to the driver which in turn

adjusts the forward current in such a way to make the error between the reference signal and the filtered input zero. When this occurs the system is said to have reached a steady-state condition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WAYNE YOUNG
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